

**Evolution of the Hominidae
Anthropology 558 (16:558:01)**

**Spring, 2019
S. Cachel**

The syllabus is available from the class Sakai site, accessible via the Rutgers Sakai portal (<http://sakai.rutgers.edu/portal>). Log on using your Rutgers net I.D. and password. Select the 558 course. Click on the “Resources” icon on the left. The syllabus will appear as a file called “558SYB.”

Course Venue: Monday, 10:55=1:55 P.M., Biological Sciences Building, Room 315, Douglass Campus

Instructor: Dr. Susan Cachel

Office: Room 203C, Biological Sciences Bldg., Douglass. Use the left staircase from the building entrance; turn right as you exit the stairwell to the 2nd floor. My office is in the complex of rooms through the steel door immediately to the right of the stairwell.

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Office Hours (Spring Semester): Wednesday 1-3 P.M., or by appointment

Course Description:

This is a course in physical anthropology that deals with the course of human evolution from our origins in an unknown member of the late Miocene ape radiation to the appearance and spread of anatomically modern humans—a time span of approximately 10 million years ago to 40,000 years ago.

Course Objectives and Goals:

Students will review basic evolutionary processes. Students are introduced to the range of theories on human origins (hominization). Cast material of the original fossils will be presented in class, so that the morphology and variation of different species can be assessed. Students will study possible first human fossil species, the evolutionary radiation of the australopithecines, and the first members of our own genus (genus *Homo*). Original stone tools and casts of stone tools will illustrate discussion about human tool behavior. Students will study the species *Homo erectus*, and its dispersal through the Old World, as well as the enigmatic species *Homo naledi* and *Homo floresiensis*. “*Homo heidelbergensis*” and the Neanderthals will also be studied. Current information on ancient DNA reveals extensive hybridization between Neanderthals, Denisovans, at least two “shadow” lineages (known only from DNA) and anatomically modern humans. Students will read the original literature, and will do an oral presentation in class on a hominin species of their own choice, and will write a final paper on this species.

Required Texts:

1. Francisco Ayala and Camilo Cela-Conde. 2017. *Processes in Human Evolution. The Journey from Early Hominins to Neanderthals and Modern Humans*. 2nd ed. Oxford (paperback).
2. Eugene Harris. 2015. *Ancestors in Our Genome. The New Science of Human Evolution*. Oxford (hardback).

These books are on order from the Rutgers University Bookstore, on Somerset Street, in downtown New Brunswick.

Other readings will be put on the class Sakai site.

The class Sakai site is accessible via the Rutgers Sakai portal (<http://sakai.rutgers.edu/portal>). Log on using your Rutgers net I.D. and password. Select Anthropology 558 from the list of available classes. Class announcements will appear here. You must regularly check your Rutgers e-mail account to see these announcements. Necessary course material is downloadable from this site (the syllabus, announcements, pdf files of papers, etc.).

Attendance Policy: Students are expected to attend all classes. If you miss one or two classes, you must use the Rutgers University absence reporting website to indicate the date and reason for your absence. An e-mail is then automatically sent to instructors. The URL for this website is <https://sims.rutgers.edu/ssra/>. In cases where students miss classes for periods longer than a week, this website will automatically direct them to consult a Dean of Students for assistance, and will help to verify the circumstances of their absence. If students are absent from class for long periods without a verified cause, the Dean's Office may direct the Rutgers Police to conduct a "Wellness Check." Note: Health, accident, and family issues are valid reasons for missing class; vacations, etc. are not.

Scholarship and Class Etiquette: The Rutgers Graduate School mandates that instructors immediately report all cases of suspected plagiarism. Please turn off cell phones while in class. It is all right to use laptops for taking notes. It is not all right to surf the web during class. This irritates the instructor (me), and is rude and distracting to other students. Do not do this.

Course Requirements: Class participation is worth 30% of the final grade. An oral presentation on a fossil human species is worth 30% of the final grade. A fully referenced 20-25 page paper on the same topic is worth 40% of the final grade.

COURSE SCHEDULE, TOPICS, & READINGS

January 28 Introductory; Classification and nomenclature; Evolutionary processes

February 4 Geologic time and the fossil record; Does the fossil record always tell the truth?
Ayala & Cela-Conde, pp. 1-77

- February 11 The Miocene hominoid radiation; The late Miocene hominoid extinctions; Ancestors of the great and small-bodied apes; Searching for the hominin ancestor Ayala & Cela-Conde, pp. 78-123
- February 18 Hominization—theories about human origins; Why *Oreopithecus* is important; Against “chimpocentrism”; Hominins escape the Miocene ape extinction event— why?
- February 25 Possible hominin ancestors—*Sahelanthropus* and *Orrorin*; *Ardipithecus*; Why bipedalism?; Parallel evolution of bipedalism—what would this mean? Ayala & Cela-Conde, pp. 124-140
- March 4 Ape-Men or Man-Apes—the big struggle to interpret the earliest undoubted hominins; The great australopithecine radiation—the longest and most stable stage of human evolution Ayala & Cela-Conde, pp. 140-191
- March 11 The origins of genus *Homo*; Early *Homo* species; Who made the first stone tools, and why were they made? Convergent evolution of tool behavior; the Lomekwi and Oldowan Industries Ayala & Cela-Conde, pp. 192-265
- March 18—**NO CLASS**
- March 25 *Homo erectus*; What are the implications of using “*Homo ergaster*”? The adaptive zone of *Homo erectus*; Pelvic variation in *Homo erectus*—what does it signify? The dispersal of *Homo erectus* throughout the Old World Ayala & Cela-Conde, pp. 266-344
- April 1 Enigmatic species—*Homo naledi* and *Homo floresiensis*; The Acheulean Industry Ayala & Cela-Conde, pp. 345-394 [Note: title of chapter 9 should be “Middle Pleistocene,” not “Upper Pliocene”]
- April 8 Midway between *Homo erectus* and *Homo sapiens*—“*Homo heidelbergensis*”; The shadowy Denisovans, known principally from DNA Ayala & Cela-Conde, pp. 395-440
- April 15 The Neanderthals; Interpreting the Neanderthals—many controversies; Ancient DNA reveals that Neanderthals are us—a revolution in paleoanthropology; The Mousterian Industry Ayala & Cela-Code, pp. 441-494; Harris, pp. 1-59
- April 22 The origins of anatomically modern humans; Ancient DNA reveals that modern

humans are an amalgam of Neanderthals, Denisovans, and at least two other fossil lineages; Archaeological changes in the Upper Paleolithic—do they signify a revolution in behavior, or are they the result of population build-up?
Harris, pp. 60-111

April 29 Oral Presentations
Harris, pp. 112-160

April 25 Oral Presentations
Harris, pp. 161-190

May 6 Conclusions; The Hominization Process; Video: “The Neanderthals”

May 9 **PAPER DUE—1ST DAY OF FINAL EXAM PERIOD**